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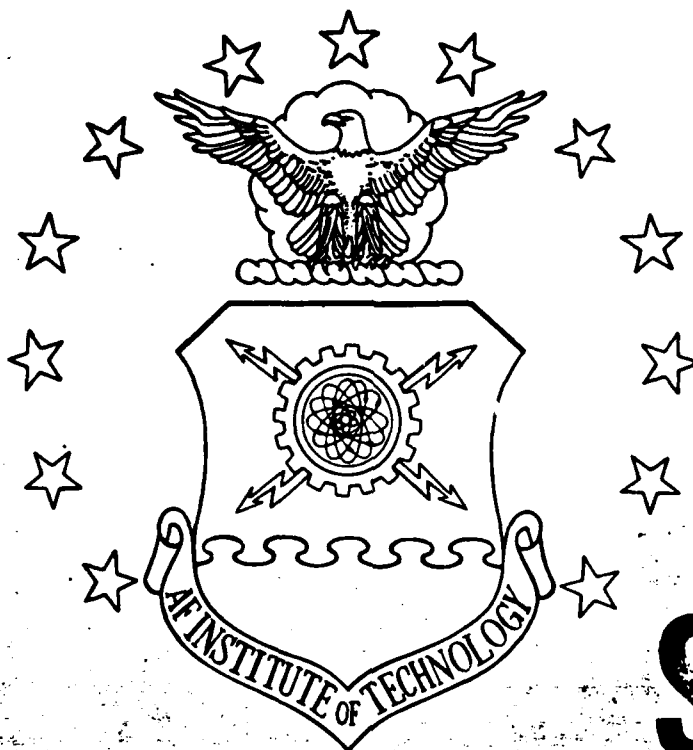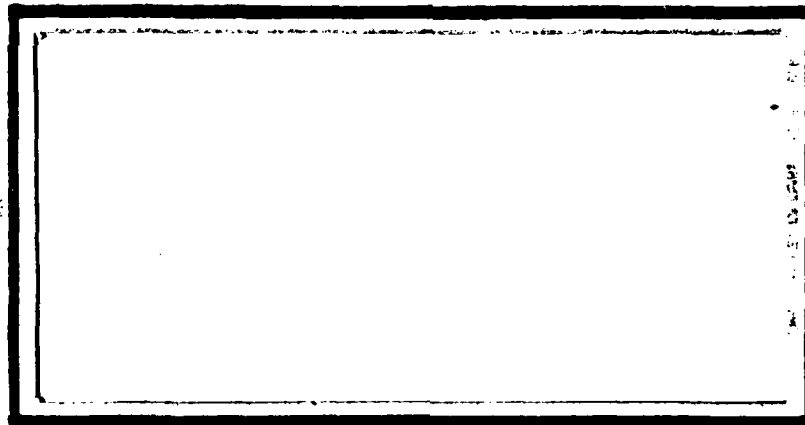
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AIR FORCE RECOVERABLE
CENTRAL LEVELING SYSTEM (D028):
RETAIL HANDBOOK

THESIS

Thomas H. Mitchell
First Lieutenant, USAF

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AIR FORCE RECOVERABLE CENTRAL LEVELING SYSTEM (D028):
RETAIL HANDBOOK

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Logistics Management

Thomas H. Mitchell, B.S.

First Lieutenant, USAF

September 1988

Preface

The purpose of this project was to develop a handbook on the Air Force Recoverable Central Leveling System (D028). The intended audience for this handbook is Base Supply Personnel with emphasis toward the Stock Control section. The handbook's contents are intended to enhance Base Supply personnel's knowledge of a complex system, and allow them to be more conversant in the requirements process.

I received assistance and advice from many people in conducting my research. First, I am deeply indebted to my thesis advisor, Captain John E. Sullivan, for providing the expert opinion and sage advice that brought this research to a successful conclusion. I am also especially grateful to the many other faculty members in the School of Systems and Logistics for their advice and unwavering support.

Finally, I want to express my deepest appreciation to my wife, Tamara and my children Jason, Michael, Jennifer and Benjamin, for their special understanding and sacrifice during this effort.

Thomas H. Mitchell

ii

Table of Contents

List of Figures

iv

List of Tables

Abstract

This paper examines the Air Force Recoverable Central Leveling System (D028). The Air Force employs numerous computer systems to provide the necessary management of expensive resources. The D028 is the distribution system for selected recoverables throughout the Air Force. Because few people understand the stockage policy, background and system characteristics behind the D028, an education problem exists. D028 manuals and regulations are too numerous for even the heartiest researcher to study and gain insight into the system.

This investigation found that Base Supply personnel, because of their infrequent interface with wholesale data systems, are less than familiar with the D028. Base Supply personnel are subject to, and must work with, the distribution of recoverable assets as computed by the D028.

To help Base Supply personnel develop more insight and a better technical understanding of the D028, this investigation compiled relevant information through: 1) an extensive literature search, 2) review of applicable regulations and manuals and 3) personal interviews. The final product: The Air Force Recoverable Central Leveling System (D028): Retail Handbook, provides the necessary background, operation and system interfaces in a 'plain english' manner that should allow a less intimidating look into the D028 system.

THE AIR FORCE RECOVERABLE CENTRAL LEVELING SYSTEM (D028): RETAIL HANDBOOK

I. Introduction

General Issue

The Air Force employs a management information system called the Air Force Recoverable Central Leveling System (D028), which computes a stockage level for recoverable items. A recoverable item has a "durable nature, which, when unserviceable, normally can be repaired economically by a field or depot maintenance activity" (17:8). The D028 system centrally computes stockage levels for recoverables at each of the five Air Logistics Centers (ALCs) and "pushes" those levels to Air Force bases, which then requisition against their allocated "push level" (3:103). "Push levels" are resource levels provided in anticipation of each base's level of need (13:5). Each ALC calculates an optimal distribution of these "push levels" to minimize expected backorders worldwide (3:105).

Currently, Base Supply personnel are subject to the D028 system, yet have limited knowledge about its operation and components (5:1). Supply analysts' at the Air Force Logistics Management Center (AFLMC) have suggested that a handbook with information detailing the system characteris-

tics would help the Air Force Base Supply community in understanding and applying the DO28 system (14:16).

Specific Problem

Retail level supply personnel, in general, do not have the knowledge and experience to understand the DO28 system (5:1). Base Supply personnel do not have a comprehensive training course in stockage policy/wholesale procedures, thus limiting their background and experience in the DO28 system. This lack of knowledge about central stock leveling becomes apparent frequently when Base Supply personnel cannot explain to their customers why a needed recoverable, that which is managed by the DO28 system, is not available. Their only recourse is to claim that the DO28 system has not allocated a high enough 'push level' for them to requisition against.

In reality, the DO28 system is nothing more than a distribution computation of the worldwide requirement for recoverable assets. When the part is not on the shelf, there are a variety of problems that may have occured. Two possible problems are: that the Recoverable Consumption Item Requirement System (D041) has computed a worldwide asset requirement that is too low, or funds to purchase re-coverables are unavailable to central procurement (5:6). The DO28 system simply does not compute what assets an organization will receive. Rather, it computes what dis-

2

tribution of asset levels will give the Air Force the greatest benefit in lowered number of backorders (3:105).

Base Supply personnel need to know the basics about the D028 system in order to make sense of their problems as they occur. Many variables enter the requirements process Base Supply personnel must use, and knowledge about this process can help the Base Supply community provide better mission support (16).

Justification

The Air Force Logistics Command (AFLC) and the AFLMC have been working together to resolve operational problems and enhance the effectiveness of the D028 system. One significant finding was that no single manual or regulation specifically explains the D028 system (5:1). There have been numerous studies attempting to explain the D028 system, however, few Air Force personnel in the Base Supply community have time to perform a complete study of the applicable documents.

In 1987, supply officers who were assigned to both wholesale and retail levels in the Air Force received a Stockage Policy Manual, written by AFLMC, that provided a brief explanation of the D028 system. Wholesale level Item Managers receive initial and refresher training on the D028 system when taking the D028 Central Leveling Course (LMMIM16) at each ALC (6:1).

To match the emphasis at the wholesale level, a retail level handbook on the D028 system is needed to strengthen the knowledge of D028 system users, Base Supply Stock Control personnel (14;15). An Item Manager's duties are similar to those of a Stock Control technician. They both work with the requirements for Air Force recoverables. Base Supply personnel need to understand the D028 system. This handbook will help Stock Control personnel in this learning process (14;15).

Research Questions

The goal of this research was to compile and study all relevant information, studies and procedures on the D028 applicable to the Base Supply community. To accomplish this goal, the following questions needed to be answered:

1) What topics about the D028 need to be included in the handbook?

2) Who are the knowledgeable civilian or uniformed Air Force personnel that can help narrow the topic choices so only the D028 material relevant to Base Supply personnel is included in the handbook?

3) Can an easily understood handbook be designed that improves the quality of Base Supply support to its customers? If so, how should such a handbook be formatted?

Background

In order to fully understand what the D028 system does, and why the Air Force needs it, one must first understand the definition of recoverable items. A recoverable is "an item of a durable nature, which, when unserviceable, normally can be repaired economically by field or depot maintenance activity" for much less than the cost to replace the recoverable (6:8). Because of the initial high cost of recoverables, the Air Force employs the D028 system to add the extra management needed to assure the availability of these assets to using organizations (4).

The present D028 system has evolved primarily through trial and error, and its advancement is due to the increasing capability of large mainframe computers. Before 1967, Air Force bases computed stock levels for recoverable items through the USAF Standard Base Supply System (SBSS), (D002A). The D002A system allowed bases to compute their own recoverable stockage levels by using standard base level procedures (19:2-1). This was known as decentralized level computation. Then, in 1967, the Air Force Recoverable Assembly Management System (AFRAMS)(D143H) was developed. AFRAMS provided the Item Manager with daily information on recoverable item levels as reported by Air Force bases, thereby allowing an Item Manager to gain increased control over reparable assets in the field (19:2-

1). An Item Manager uses output from the Recoverable Consumption Item Requirements System (D041) to compute the number of recoverable assets to buy and repair by using daily input from the AFRAMS system. Although AFRAMS has a daily input, the D041 system only performs a quarterly computation. Even though AFLC computed overall requirements, each Air Force base still individually computed their local requirements (19:2-1). The two requirement systems simply did not match.

In 1975, the Variable Safety Level (VSL) was added to the D041 to provide protection against fluctuations in demand. The VSL is a mathematical technique that projects a greater range of items to buy and repair in the recoverable item requirement process (19:2-1). If the need for a particular component would be significant, the Item Manager could purchase a larger amount of assets for recoverables having high demand variability. However, the requirements computation and the distribution systems were incompatible. The distribution system had no means of optimally allocating the assets computed by the D041 system and the added VSL. In essence, the Air Force was only able to efficiently perform one part (the requirements computation) of the total allocation process (19:2-1).

In 1977, HQ USAF/LEYS and HQ AFLC/LO decided to establish central levels based on D041 requirement levels computed by each Air Force base (19:2-2). In 1980, testing

6

and evaluation began on what was to become the D028 system. In August of 1982, the D028 system was fully implemented at all ALCs (19:2-2).

Operation

The D028 system computes "push levels" quarterly for all recorded users. A recorded user is a base that reports an adjusted stock level, or a daily demand rate greater than or equal to 0.0056 (9:18-5). Adjusted stock levels are recoverable stockage levels negotiated/approved between a Base Supply and an Item Manager. The computed (D028) level then becomes the official demand level for that particular user, and supersedes any adjusted or fixed level computed previously (2). Negotiated levels, such as fixed or adjusted, are allowable and needed. The D028 takes previously negotiated levels, and uses them during the computation of it's "push levels". But, before the system can compute the "push level", it must gather requirements and usage data from its interfacing systems. "The usage data include daily demand rates (DDRs), percent of base repair (PBRs), percent of base condemnations (PBCs), base repair cycle times (BRCTs) and order and ship times (O&STs)" (9:18-5).

The D028 computes the depot "level" of recoverable items and then computes the "push level", also called the D028 level, for each retail (base) user from the quantity remaining after the depot allocation. The D028 level, with

7

a goal of minimizing the expected backorders at each base, is then provided to the user (9:18-5). Depot stocks are filled with actual stock on hand, and the remaining assets can then be requisitioned by each SBSS computer as constrained by it's D028 'push level'. These are only 'push stock levels' and not the number of assets pushed.

The D028 system computes a central stock level for selected recoverable items, instead of each base computing their own individual demand levels. Although the allocation level is computed centrally at depot, it is partially based on information provided from the base. The D028 operates in such a way that decisions on buying and repairing recoverables directly reflect the needs of Air Force bases and depots worldwide (19:2.2).

Scope and Limitations of the Research

Most published material on the D028 system is in the form of mathematical algorithms and detailed computer program documentation. For the purpose of this research, the in-depth mathematical algorithms would be inappropriate. The intended audience for this handbook was strictly Air Force personnel who work as retail supply personnel and complex algorithmic explanations would have been of little benefit. The retail Base Supply community needed a handbook with explanations of operational characteristics and system interfaces (16).

8

The DO28 system is very much a part of the SBSS. It determines the distribution of recoverables, which is of primary importance to any Base Supply. By knowing what the DO28 process does, Base Supply personnel can interact with their MAJCOM representatives and resolve mission related issues concerning the DO28 system (2).

Summary

This chapter presented a problem for study in the area of the DO28 system. Specifically, it has addressed the need for a handbook on the DO28 system for the base level supply community. A summary of background and operational characteristics was presented to: 1) familiarize the reader with the DO28 system, and 2) help them to understand the general issue and problem statements. The following chapter presents the methodology used for solving the research problem.

II. <u>Methodology</u>

<u>Chapter Overview</u>

This chapter outlines the approach used in solving the research questions stated in Chapter One. A threephase research plan was developed and implemented to accomplish this objective. The three phases were: 1) Topic Identification, 2) Topic Confirmation, and 3) Handbook Development. Phase one consisted of identifying major topics pertaining to the D028 system. In phase two, expert opinion was solicited through phone interviews, 1) to validate the importance of those identified topics, and 2) to identify other significant topics pertinent to the D028 system. In the third phase, this researcher compiled the validated topics into handbook format by researching available documents concerning each validated topic. This chapter describes the three phases of the research plan.

<u>Topic Identification</u>

To satisfy the first research question, the researcher performed a thorough literature review. This provided the necessary information for topic identification, and consisted of the following sources:

1. Defense Technical Information Center (DTIC). The Center provided broad based subject material on the

D028 system. It provided information on how the entire DOD manages recoverable items.

2. Air Force Logistics Command Publications Library. This library provided applicable regulations and manuals.

3. Air Force Institute of Technology (AFIT), School of Systems and Logistics Library provided applicable journal articles on the D028 system.

Topic Confirmation

Topic confirmation was accomplished by performing telephone interviews. Telephone interviews were used to gain depth and detail of information on the D028 system (11:160). The telephone interview method was selected over the mail survey method because, mail surveys can be subject to non-response, and are limited in the amount of in-depth information that can be secured (11:159). The interviews were largely unstructured to allow for a freer exchange of ideas. This researcher considered the topic confirmation phase the best time to simply 'brainstorm' with interviewees to determine the best topics. Logically, face to face interviews would be too costly when the needed information could be secured over the phone.

The sample of retail logisticians to interview was limited to supply analysts at the AFLMC, AFLC and the following major commands: Strategic Air Command, Military Airlift Command and Tactical Air Command. By learning the amount of interaction the three commands had with the D028

11

system, this researcher felt these commands would provide enough information for formulating the handbook.

The original interviewing process was performed primarily with Base Supply personnel in the following categories: Chiefs of Supply, Assistant Chiefs of Supply and Stock Control Section personnel. However, due to the lack of daily interaction with the D028 system, Base Supply personnel lacked the knowledge/background to help advance this research. For this reason, the bulk of interviews were performed primarily with supply analysts at the MAJCOM level. The supply analysts are the focal point where Base Supply personnel can come to find answers to their day-to-day problems/inquiries, and therefore were best suited to determine what relevant topics should go into the D028 handbook.

After the interviews were completed, an analysis by this researcher determined which topics would be included in the handbook. The topics were compiled and listed by rank order to determine their respective degree of importance. Due to the unstructured nature of the interviews, a statistical analysis was inappropriate. Logically, all topics could not be included due to the concise nature of a user's handbook.

The interview process allowed this researcher to glean enough information to develop criterion for topic selection. In order to be selected a topic must:

1. Have relevancy to daily operation in Base Supply.

2. Be qualitative in nature rather than quantitative (the vast majority of Base Supply personnel have no intention of further validating complex algorithms).

3. Convey information applicable to problem solving within Base Supply.

4. Help Base Supply personnel to better understand a complex system.

The interviewees gave their best ideas for the handbook, and this researcher placed full confidence in their knowledge and ideas. Those topics/ideas meeting the above criterion, would be included in the handbook.

Handbook Development

The goal of this research plan was to compile a concisely written handbook on the D028 system. The handbook format would sharply contrast the encyclopedic format of the Standard Base Supply System Manual, AFM 67-1 Vol.I part one and Vol.III part one. AFM 67-1 was written in a form which tends to intimidate users, and places an added burden on the learning process. The D028 handbook will overcome the inherent problems of an encyclopedic manual by its concise format.

The validated list of topics became the framework of the handbook. The final step was to compile the validated list of topics into handbook form. The explanation of each

topic was extracted from source manuals, studies and
regulations on the DO28 system.

The Manual for Preparing Air Force Publications (AFR
5-8), was used to write the handbook in the proper format
under established guidelines. An audience analysis was
performed to tailor the handbook for individual use.
Demographic questions were asked to help determine audience
background, education level and professional experience
(6:54). AFR 5-8 gave specific guidance on writing for a
particular audience, and any deviation from that guidance
might have reduced the handbook's effectiveness.

The handbook has condensed chapters on only the most
pertinent information. Experienced MAJCOM supply directors
and analysts have given their best estimate of what the
final handbook should contain, and only topics most
preferred by those experienced logisticians were included
in the handbook.

Summary

This chapter has detailed a three - phase research
plan to compile a concise handbook on the DO28 system. In
the topic identification phase, the major topics were
developed from an extensive literature review. The topic
confirmation stage involved: 1) construction of an
interview guide, and 2) performing the interviews. The
final phase involved compiling an explanation of each
validated topic into a concise handbook on the DO28 system.

14

III. Findings

The first significant finding was that Base Supply
Stock Control personnel wanted a handbook on the DO28
system. The common opinion, of personnel interviewed, was
that they didn't have the necessary knowledge to answer
general inquiries from MAJCOM or AFLC. They felt this
information was definitely needed. After the interviews
were complete, this researcher knew a handbook would
strengthen Base Supply personnel's knowledge of a very
complex system.

Interviews with MAJCOM personnel proved fruitful
because of their daily interaction with the DO28. The
following are key remarks made by personnel in the supply
directorates and analysts at the specified MAJCOMs.

Interview with Lt Col Douglas Blazer HQ AFLC/MMMA:
'I think the base needs to know why we have the central
leveling system. Why it differs from the way it computes
levels versus the way the SBSS computes it's own levels.'
'Don't include too much historical stuff...just how its
done and how is it affecting me today' (4).
'It's not an 'asset push' system, its a 'levels push'
system.'
'The system is a good one, and bases should realize that
under the DO28 system, they get more recoverable assets

than if the Standard Base Supply System (SBSS) calculated and "pulled" their assets for them" (4).

Interview with CMSgt Les Pornacott, HQ TAC/LGSW:
"I don't understand the algorithm, but if you could make it clear just how the D028 does it, I think that would be great."
"The handbook is definitely needed" (15).

Interview with CMSgt Timothy S. Doolin, HQ SAC/LGSMY:
"Plain English. The formulas are in no way needing further validation. What they (the Base Supply community) need to know is how does that level get on my computer, and what does it really mean to me. There is a lot of misunderstanding about that."
"Do a philosophy job. People tend to learn a lot easier if they understand why something is done instead of just it does this" (10).

Interview with Captain Jerry L. Bateman, HQ MAC:
"The experience level is not what it should be."
"There is a need for a handbook that explains the process" (2).

The interviewees were in total agreement on the following topics:

1. Policy

2. The D028 process

3. What good is the D028 system?

4. Input data sources.

5. Future Issues

The following is a brief summary of the contents of what will be contained in each confirmed topic.

1. Policy. Why was the D028 system developed? Base Supply personnel are curious as to why the Air Force does not have a strictly `pull` system. The majority of personnel realize the Air Force inventory system consists primarily of a `pull` system. For this same reason they lack understanding why certain recoverables are under a `levels push` type of system.

2. The D028 Process. Most personnel need to know exactly what the D028 system is, and what it does.
The average person affected by this system believes the D028 is computing their adjusted level, when in reality it is computing the distribution of the level determined by the D041 requirement system. If there is a problem with the number of units authorized under a D028 adjusted level, chances are that the D041 system computation underlying the D028 system is at fault. If personnel can make the distinction between the requirements computation and the distribution computation, the D028 system will be more easily understood.

3.   What good is the DO28 system? By explaining the
benefits of this system, personnel will gain a better
understanding of what the system does. Base Supply
personnel can gain insight into what the system does by
learning the philosophy that structured the DO28 system.

4.   Input Data Sources. By having a visual diagram of the
entire system, along with an explanation of each source,
Base Supply personnel will be able to understand more
easily how the DO28 goes about distributing the asset
levels. The DO28 system interfaces with eight major
computer systems. Because each perform a different
function, it is easy to misunderstand just exactly how the
DO28 computes a ˙push level.˙

5.   Future Issues. The Logistics Management Institute is
looking at making the DO28 an asset based system. Base
Supply personnel can use this information to get a ˙feel˙
for where the system is headed. Changing to an asset based
system will dramatically change the way depot and base
supply currently do business (12:1-2).

Summary

This chapter summarizes the interview process and
finalizes the topic confirmation phase. A brief summary of
each confirmed topic was included to give the reader an
idea of the handbook's contents.

IV. Conclusion and Recommendations

Conclusion

The appended DO28 handbook will help the Base Supply community in learning about the DO28 system. The characteristics of the DO28 system can be visualized and interpreted for what they really are, and Base Supply personnel can become well versed in the policy and operation of recoverable requirements distribution.

Recommendations

From this researcher's perspective, there are plenty of complex systems operating in the logistics environment and Base Supply personnel could use more easily understood manuals/handbooks. For one, the Recoverable Item Requirement System (DO41) is just as important as the DO28, yet the manuals and regulations are written at a level not suited for base level personnel. Base Supply personnel's access, to these documents can be limited.

If additional complex systems can be simplified, the huge giant we call 'the logistics process' will be less intimidating to retail logisticians.

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│  Air Force Recoverable Central Leveling System:         │
│                                                          │
│             DO28 Retail Handbook                         │
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<u>Appendix:</u> D028 Retail Handbook

Chapter I

Background

In order to fully understand what the D028 system
does, and why the Air Force needs it, one must first
understand the definition of recoverable items. 'A
recoverable item is an item of durable nature, which, when
unserviceable, normally can be repaired economically by a
field or depot maintenance activity' (17:8). Because of
the initial high cost of recoverables, the Air Force
employs the D028 system to add the extra management needed
to assure the availability of these assets to using
organizations (4).

The present D028 system has evolved primarily through
trial and error, and has advanced due to the increasing
ability of large mainframe computers. Before 1967, Air
Force bases computed stock levels for recoverable items
through the USAF Standard Base Supply System (SBSS),
(D002A). The D002A system allowed bases to compute their
own recoverable stockage levels by using standard base
level procedures (19:2-1). In 1967, the Air Force
Recoverable Assembly Management System (AFRAMS)(D143H) was
developed. AFRAMS provided the Item Manager with daily
information on recoverable item levels as reported by all
Air Force bases, thereby allowing an Item Manager to gain
increased control over recoverable assets in the field

(19:2-1). An Item Manager uses output from the Recoverable
Consumption Item Requirements System (D041) to compute the
number of recoverable assets to buy and repair by using
daily input from the AFRAMS. Even though AFLC computed
overall requirements, each Air Force base still
individually computed their local requirements (19:2-1).

In 1975, the Variable Safety Level (VSL) was added
to the D041 to provide protection against fluctuations in
demand (19:2-1). The VSL is a mathematical technique that
projects a greater range of items to buy and repair in the
recoverable item requirement process. If the need for a
particular component would be significant, the Item Manager
could purchase a larger amount of assets for parts having
high demand variability. However, the requirements
computation and the distribution systems were incompatible.
The distribution system had no means of optimally
distributing the assets computed by the D041 system and the
added VSL. In essence, the Air Force was only able to
efficiently perform one part (the requirements computation)
of the total allocation process (19:2-1).

In 1977, HQ USAF/LEYS and HQ AFLC/LO decided to
establish central levels on D041 requirement level computed
by each Air Force base (19:2-2). In 1980, testing and
evaluation began on what was eventually the D028 system.
In August of 1982, the D028 system was fully implemented at
all ALCs (19:2-2).

Up to this point, the terms D028 and D041 have been discussed as if they are commonly known throughout the Air Force. The D028 and D041 are data system designators (DSD) for large computer programs that operate on mainframe computers located at the ALC. The computer systems provide you, 'the user', overall computation of requirements and distribution of that requirement. The systems collect input data from bases around the world primarily through the automated digital network (AUTODIN) (19:4-5;9:18-9). The AUTODIN transmission of data can be by either satellite or dedicated communication line. An even larger number of 'D' systems similar to the D041 and D028 are used to collect the data for the D041 and D028 systems. The information from the other 'D' systems is then input to the D028 computer program. After usage data from organizations has been transmitted to the ALC computers, the D041 and the D028 systems go to work on the available data and perform their computations once each quarter (19:18-5).

Chapter II

The D028 Process

The D028 system was created to help minimize expected backorders (EBOs) at Air Force bases that use selected recoverable assets (9:18-3). Minimizing expected backorders is a simple process of allocating each additional item to a base with the 'greatest need' (a backorder occurs each time a demand occurs at a forward operating base and no replacement is available). This need is defined as the amount by which each base backorder quantity would be reduced by the addition of one more item (18:7). The D028 system is a management system applied to often critical/expensive recoverable assets which, if not available for use, can degrade a user's mission.

Assets do not equal requirements. The D041 system has computed a requirement the Air Force would like to have, but cannot necessarily afford. The D028 system allows using activities to pull available assets up to their D028 central 'push levels', but it cannot provide assets that don't exist (17:01-9). The D028 system is a 'levels push' and not an 'asset push.'

Recoverable assets in the D028 system are expensive and we cannot always purchase as many as we need. Nevertheless, the D041 system computes an asset requirement for the Air Force on every recoverable item in the

25

inventory. The DO28, however, only performs a distribution
on certain recoverables, because not all assets warrant the
same treatment. That is, all recoverables are not
expensive or critical, and many have very little demand
placed upon them (3:104). The DO41 computes a worldwide
requirements computation on 100% of Air Force assets at
each ALC. However, only 25% of recoverable assets are DO28
centrally leveled. The other 75% of recoverables are
computed without a distribution allocation. The DO28
recoverables are requisitioned by the SBSS computer at each
base, which uses the DO28 'push level' to requisition
against. Approximately 17,500 recoverables worldwide are
centrally leveled by the DO28 system. Granted this figure
represents only 25% of Air Force recoverables, but
understand these are the faster moving recoverables. The
recoverables not managed by the DO28 system are the 'slow
movers' that have very little demand (4).

The most important concept to understand is the DO28
system is a distribution computation and not a requirements
computation (10;15). A distribution computation is simply
where ideally each recoverable will be physically placed.
A requirement computation is how many recoverables are
needed to satisfy existing and future needs. Requirements
computation is performed solely by the DO41 system which
computes the worldwide requirement for recoverable items.
This requirement computation is far different than the one

done by the SBSS computer. The D041 performs a recoverable requirements computation for all AFLC managed 'XD2' items. The requirements levels, centrally leveled by the D028 system, are then put into depot stock to be requisitioned by the SBSS computer. The requirements computation performed by the SBSS computer at each base requisitions the non-D028 recoverables from depot.

The D028 system performs it's distribution with the following three constraints:

1) All reported users of a D028 recoverable will receive at least a 'push level' of one.

2) All users will be pushed a level at least as large as their adjusted level.

3) The C-factor rating for each selected user has an impact on how high a 'push level' a user will receive (5:3). A C-factor is a rating applied to each base's supply account. Those bases with a 'must support' mission will have a higher C-factor placed upon their safety levels which in turn will increase their 'push levels' (5:4).

The D028 calculates the distribution of asset levels based on usage data and requirements data. The usage data is supplied daily into the D041 through the AFRAMS. The usage data consist of:

1) daily demand rates (DDR),

2) percent base repair (PBR),

3) base repair cycle times (BRCT),

27

4) order and ship times (O&ST) and

5) previously negotiated levels (18:19-223).

Requirements data provided deals specifically with areas such as special levels and specified portions of the D041 requirements system (18:19-223). The D041 computation is fed into the D028 system for its computation of the distribution of that requirement computation. The usage data, and other information supplied by the D041, gives the D028 system a 'feel' for which bases have the greatest need. By satisfying those bases with the greatest need, the expected backorders for selected recoverables will be less than if no distribution was accomplished.

As stated earlier, the D028 computation is only performed on selected recoverables. Selected recoverable users are defined as bases that have established a demand level (two demands in 365 days) or a base with some type of an adjusted stock level (9:18-5). But, not all bases meeting this criteria become a using organization. Some units may have an item that is being phased out or modified. In this case, a temporary or permanent item exclusion may be granted by an Item Manager. In so doing, he/she is placing the management of a particular item under manual control, to afford even greater management of a particular asset.

By using marginal analysis, the D028 decides which base has the most urgent need. The base with the most need

will receive levels in the order the D028 system calculates

as the highest marginal gain. Each recorded user will

receive a 'levels push' of at least one, and all D028

levels will be equal or higher than approved adjusted

levels. The level determined by the D028 system is then

transmitted to each reported user.

The above information is fine, but how does the SBSS

receive a 'push level' computed by the D028? During the

actual push:

1. The D028 has determined each using activities

distribution of assets for the quarter (the 'push level').

2. It then sends those 'push levels' to each base through

the automated digital network (AUTODIN) network.

3. The SBSS computer accepts the input from the ALC as a

document identifier code (DIC XCA) transaction.

4. Upon completion of the input the SBSS then sends out a

levels receipt acknowledgement (TRIC XCC) transaction

telling the ALC computer it has accepted the transmission

and all is well. A detailed explanation refer to AFM 67-1,

Vol. II, Part two, Chapter 19.

5. If the transmission was not received, or received

improperly due to transmission problems, the D028 repeats

the process 12 days later. This is to clear up any

discrepancies that do not have XCCs transaction sent

back to the ALC (9:18-3-18-6).

Key Concepts

1. DO28 is not a requirements computation, rather it is a distribution levels computation.

2. The D041 worldwide asset computation and the usage data for selected recoverables are used by the DO28 to compute the distribution of the worldwide assets.

3. The DO28 distribution allocation overrides the special demand levels computed by each using base for that particular item unless that base has requested and received approval of a negotiated level (even though a user may have a negotiated level, the DO28 level will be equal to or greater than any negotiated level). The DO28 automatically accounts for negotiated levels, by turning approved, adjusted levels into 'push levels' (10).

4. The DO28 allocation works on a quarterly basis and all data it receives prior to the allocation process must be correct. Whenever the requirements data or usage data are in error, the DO28 cannot compute an accurate distribution of worldwide assets (17:01-3).

5. The DO28 system performs a distribution computation for selected recoverable items. Not all recoverable items meet the criteria to be included in the DO28 system.

Chapter III

D028 System - Good or Bad

First, lets look at Air Force policy on adjusted stock
levels. Adjusted stock levels are used to control base
stock affected by emergencies or special circumstances, for
example, during an increased flying program. Adjusted
stock levels allow for fluctuations in demand by setting
stockage levels above normal limits on certain recoverable
or expendables.

Logistics managers 'must recognize that Air Force re-
quirement and distribution policies do not provide for
assets to be stocked at the base (retail) level in
sufficient quantities to meet all contingencies' (7:12-91).
Air Force stockage policies are meant to provide adequate
stocks for normal demand rates, repair cycle times and
order & ship times (O&ST). The stockage policies also
provide a quantity of safety stock to allow for variations
in supply and demand. The safety quantity attempts to
provide additional assets to help cushion the impact of
mission changes (7:12-91).

The D028 level is the same as an adjusted level, that
is it serves as a base requisitioning objective. The only
difference is that the adjusted level is determined
centrally at depot where an Item Manager has more

information available to make the right decision for purchasing and distributing Air Force recoverables.

The SBSS is a `pull` system. The D028 is just one part of that `pull` system. The D028 system cannot push assets to a using organization. If the D028 system allocates a `push level` of ten to a base - the SBSS computer will order ten units. In effect, the SBSS is the `pull` part of the system. It requisitions recoverables up to the D028 `push level.` This doesn't mean that AFLC has ten assets to give. Having a `push level` of ten does not guarantee that ten assets are available. The D028 system takes the computed requirement level from the D041 and allocates that (4).

Lets say, for instance, the D041 computes a requirement of ten and the depot only has five assets available. The Item Manager will purchase an additional five assets and place them on backorder. Each SBSS computer has put ten assets on order and the remaining five assets will be shipped as they become available. This is how the system is designed to work. This is not much different from a standard `pull` system, except that it gives an Item Manager more flexibility to allocate and purchase assets in a smarter way. The Item Manager knows how many will be needed need by virtue of the D041 requirements computation and the D028 system distributes the assets that are available, plus those on order. If an Item Manager orders

additional recoverables, over and above the normal demand, they know where the assets are to be distributed when they arrive. This is not to suggest that the user has an immediate need for ten assets. Rather, it suggests that by analyzing the history of a recoverable, the Air Force can buy our future spares in an efficient manner (4).

The worldwide requirements computation performed by the D041 is the amount of assets needed to perform the mission in peacetime and wartime, given a cost constraint. The D041 level will usually be higher than what is actually available to fill the supply, maintenance, storage and transportation systems (12:3-2). This asset level is where we would like to be at some future date.

Without the D028 - how could we place an optimal number of assets at each base and depot? The reason the D028 system allocates the D041 organizational intermediate maintenance (OIM) requirements to both depot and 'the user' is that, in most instances, supply support is improved if the requirement is not completely allocated to the user (base). If a pool of resources is available at depot, a more even distribution can occur (when needed).

This can be illustrated by the following example: "Suppose an item has only two users, one in the Pacific area and one in Europe. Suppose also, the D041 computed (OIM) requirement is only one unit of the item. If it is

allocated to the Pacific user as a demand level, it is unavailable to the European user, and vice versa. Therefore, the best support would be obtained by giving both users a zero demand level, and retaining the item for issue at the depot level" (18:6).

Many supply personnel feel that the D028 has computed a level that is too low, and the SBSS requirements computation would compute a higher amount. In fact, historical records show that 86% of the time the SBSS computer will compute a requirement for a recoverable that is lower than the D041/D028 computation (4). Because the D041/D028 systems look at future needs, the level is usually higher than if a Base Supply computed their own level. In some instances, a D028 level may be too low (4). There are several things that can cause this: 1) there is a problem with the data being fed into the D041 or D028 systems, or 2) the component is very expensive and the D041 system has projected a low requirement. The D041 system, by design, computes a low requirement level if a particular recoverable is expensive (5:6).

Up to this point we've talked about three different types of recoverable levels: 1) D041 requirement level, 2) D028 "push level" and 3) SBSS demand level. The Central Level Item Summary (CLIS) report shows the three levels, each by their respective stock number. The CLIS report is produced at each ALC, and also transmitted via AUTODIN to

each MAJCOM. ALC Item Managers, and supply analysts at MAJCOM use the CLIS report to determine recoverable asset position/management needed by each recoverable stock number. The MAJCOM report will only show those stock numbers that are used by each particular command. The following table shows real world data on two particular recoverables from a CLIS report. The first stock number is a Manifold Assembly for a B-52 Bomber, and the second is a Fairing for a KC-135 Tanker.

Partial CLIS Report

Stock Number	D041 Level	D028 Level	SBSS Level
1560-00-867-0561BF	188	146	64
1560-00-856-4054FL	16	12	8

Table I

As you can see, the D041 has computed the worldwide requirement level for these two recoverable assets. The B-52 Bomber and the KC-135 Tanker are considered mature weapon systems, and we can see that the SBSS level is much lower than the D028 level. The SBSS level represents the demand computed at SAC bases using the particular recoverables. Also, note that the D041 computation is much higher than the D028 computation. If the D028 computation is subtracted from the D041 computation, the remaining amount is the depot allocation (10).

The above asset levels may or may not represent actual

asset levels. The number of actual on-hand assets are primarily dependent on funding for recoverable procurement. The actual requirement computation and distribution of that computation have nothing to do with actual Air Force asset position. The D041 worldwide requirement computation is the asset level the Air Force would like to have, but not necessarily can afford (15).

Key Concepts

1. We want to make sure the levels we allocate to a base comply with the way we are centrally buying and computing the requirements for recoverable assets. Item Managers are purchasing recoverables with an eye towards the future because of the lengthy leadtimes involved and variability in demand on selected recoverables (4).

2. The D041 system, combined with the D028 system will, 86 percent of the time, compute a higher 'push level' than the SBSS (4;15).

IV.

System Interfaces

The D028 system uses manual and mechanical inputs to reach the optimum distribution of recoverable assets. Manual inputs are those which are physically updated by a computer operator at an ALC. These inputs are largely additions and deletions of users and stock numbers included within the D028 system. Mechanical inputs are basically automatic processes that the computer performs on its own. The computer, once set in motion, will perform any designated function as long as the information input is correct. Note: See figure one for a diagram of information flow during D028 processing.

The manual inputs to the D028 system come from the ALC Edit, Index and Routing Subsystem (D143B). The stock number is added or deleted manually by the system operator (9:18-8). For mechanical inputs, we'll start with the Recoverable Item Consumption System (D041). This system computes the worldwide number of assets needed by the Air Force each quarter. It computes current as well as future requirements for all recoverables under AFLC control (9:18-7).

The Item Management Stock Control and Distribution System (D032) functions as the identifier of recoverables as either included or excluded in the D028 system. The

37

D143H also provides adjusted levels to the D028...for use in the central computation of base levels' (9:18-6).

The Central Knowledge Subsystem (D143H) also know as AFRAMS is used by Item Managers to track where current inventory recoverables are located each week. An additional function of this subsystem is to keep a data base for Item Managers to review periodically when problems or questions arise. The system also provides serviceable excess notices to delete asset levels that are in excess of requirements. Lastly, it provides mechanical backorder cancellation and mechanical redistribution orders to keep serviceable assets at their most optimum level (9:18-8;7:12-93).

The History Accumulation Subsystem (D143F) provides the amount of recoverables/reparables each base has repaired during the previous quarter. The Item Manager uses it to show the 'repaired this station days' and 'repaired this station quantities' for each stock number and identified stock record account number (SRAN). In reality, this subsystem shows the recoverable repair capability for each using base (9:8-8).

The Intransit Control Subsystem (D143K) is used to provide the standard order and ship time quantity for recoverables by SRAN for any stock number in the D143B subsystem. This system shows the average time it takes for an asset to move through the repair pipeline from depot to

base and vice versa. This system is particularly useful when the D028 computes levels for an overseas base against that of a stateside base. Pipeline is a general term used to describe the flow of assets between a base and a depot (repair organization) (9:18-9).

The DOD Activity Address Directory/Activity Data Control System (D124) is used to add or delete SRANs used by the D028 system. Once a base no longer meets the criteria for D028 control it will be deleted from this system (9:18-7).

The M024B is the communication link for transferring D028 central levels to the D002A (SBSS). The data is first configured into the proper format for transmission. It is then transmitted through AUTODIN and received at it's destination and put back into a useable form by that computer (9:18-9).

Key Concepts

1. The systems interfacing with the D028 are providing requirements and usage data to allow the D028 to optimally distribute worldwide requirements computed by the D041.

2. The systems are mechanical (except for the D143B) in that the processing they do is automatic, that is, once a computer operation is started by a system operator, no further inputs are required.

3.   The systems, for the most part, share information back and forth in order to compute the best distribution of requirements.
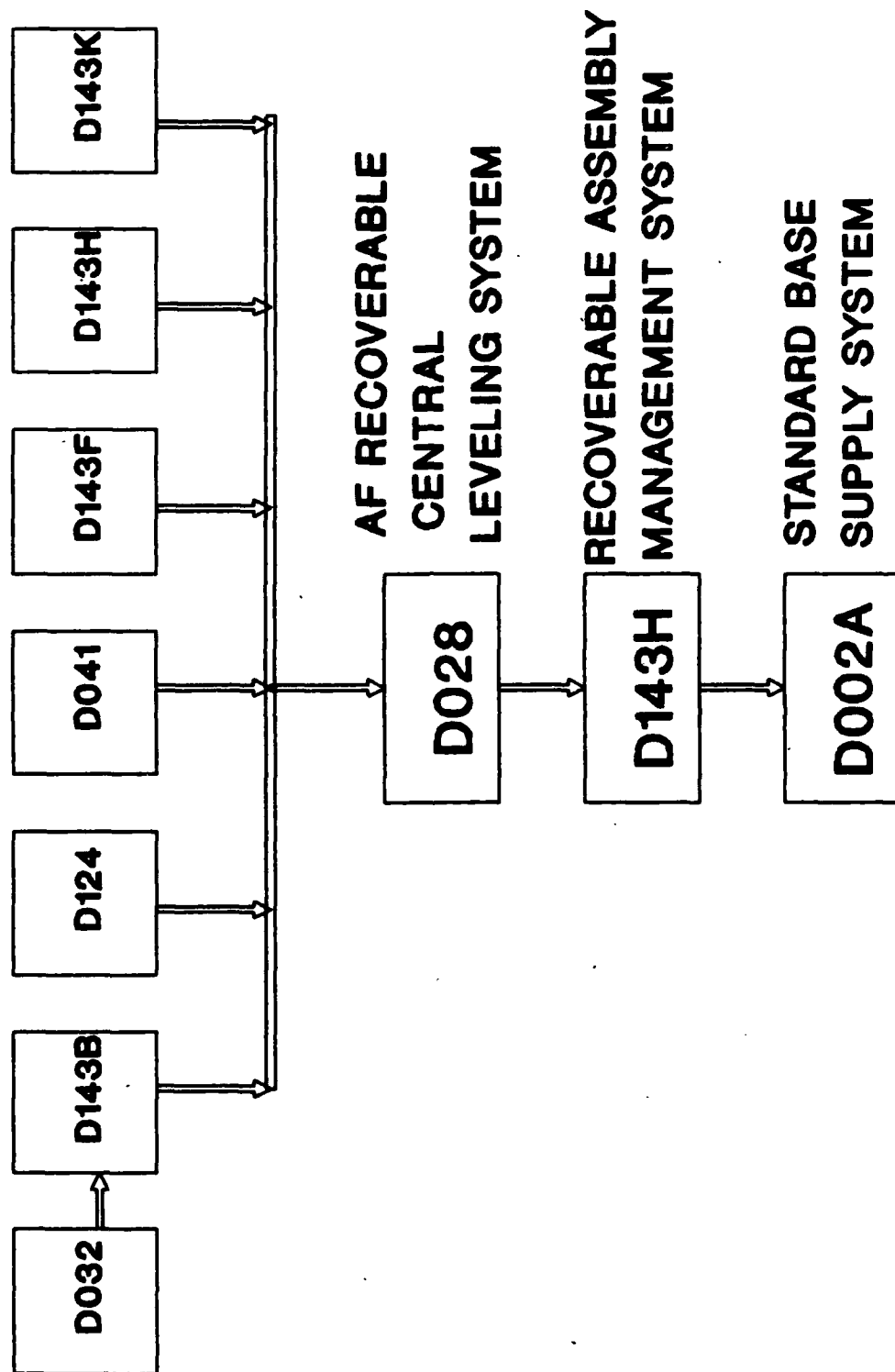
DO28 Quarterly Processing

Figure 1.

V.

Future Issues

The D028 was implemented in September 1982 with the intention of completing three stages of development. The first stage has been accomplished, and is currently operating as explained in this handbook. The second and third stage are aimed at turning the D028 into an asset based system (18:2-1).

What does this mean? For one, the distribution of assets will no longer rely on the D041 for its requirements processing. The asset based system will, accumulate the actual asset positions of each ALC, the repair pipeline and base stockage level. Once the asset position is calculated by the `asset based system`, a distribution of actual `on-hand` assets will take place. This makes sense since we are working on <u>actual</u> mission equipment needing <u>actual</u> parts. The major problem in changing to an asset based system seems to be deciding how to track the location of recoverables across all pipelines.

In any event, look for this to happen in the near future - as AFLC and AFLMC figure how to bring an asset based system on line.

Chapter VI

Terms Explained

Adjusted Stock Level - a level authorized to stabilize the demand levels or to establish a minimum level for nondemand items (7:12-91).

Air Logistics Center (ALC) - the Air Force has five ALCs that purchase, distribute and stock the recoverables/ consumables. The locations are: 1) Warner Robbins ALC, GA, 2) Sacramento ALC, CA, 3) Oklahoma City ALC, OK, 4) San Antonio ALC, TX and 5) Ogden ALC, UT.

Air Force Recoverability Assembly Management System (AFRAMS) - a system that connects Air Force bases worldwide to each ALC. It collects daily reports needed by Item Managers to make decisions on recoverable assets (19:2-1;8:3-11).

Air Force Manual 67-1 - this is the Standard Base Supply System (SBSS) manual.

Asset Based - when the DO28 system becomes asset based, it will determine a distribution based on actual assets (12:iii).

Asterisk Condition - this condition occurs when the D028 'push levels' sum to an amount greater than the D041 worldwide requirement (9:18-19).

Automated Digital Network (AUTODIN) - 'a worldwide DOD computerized general purpose communication system which provides for transmission of narrative and data pattern (card image) traffic' (7:25-4).

Backorder (B/O) - 'a condition where the user is unable to fill a demand for a unit of issue of the item immediately, with 'off the shelf' stock' (18:5).

Base Repair Cycle Time (BRCT) - 'represents the actual time in days to process and repair an item' through base repair (17:3-15).

C-factor - a rating applied to each base's supply account. Those bases with a 'must support' mission will have a high C-factor applied by HQ USAF (5:4).

Data System Designator - a code used to identify computer programs/systems such as: material management, communication systems etc. An example is the D028 in which the 'D' represents material management and the '028' for the 28th system of its type (17:02-1-02-2).

Daily Demand Rate (DDR) - this is the average quantity of an item that is used daily (9:18-34).

Demand Level - this is a stock level that is determined from past and present demands, as computed by the Standard Base Supply System (3:107).

Depot Allocation - the first allocation the D028 makes is to the depot. What is left over after this allocation is left for each using base to requisition (9:18-5).

Distribution Computation - after the D028 performs it's computer operation on a CYBER computer at the ALC. The resulting distribution computation provides the information the Item Manager needs to distribute the requirements computation from the D041 (9:18-5).

Document Identifier Code (DIC) - 'to identify external transactions (requisition, referral action, status, follow up, cancellations, etc.) to the system they apply to, and to indicate the purpose and use of the data as intended by the operation. The SBSS will recognize these codes under program control, select the appropriate program, and react to the data' (8:3-76).

Expected Backorder - this is the anticipated retail level worldwide backorder rate for the item as calculated by the D028. This figure represents a snapshot of the probability of recoverables being on backorder at a given time (18:5).

Expendability, Recoverability, Repairability, Category (ERRC) code - a three digit alpha/numeric code designating

a particular item as recoverable or expendable. The code also signifies the level of repair and cost category (8:3-114).

Fixed Level - a special level designed to maintain the stockage position of an item at a constant level (8:3-15). This is a negotiated level that is approved by an Item Manager and exceeds the computed demand level (7:12-92).

Item Manager - an individual assigned management responsibility for one or more specific items of material (17:6).

Levels Receipt Acknowledgement (TRIC XCC) - a transaction mechanically output by the SBSS (D002A) and input to the ALC computer telling it a "push level" for a recoverable has been received (8:3-107).

Marginal Analysis (MA) - a process used to minimize expected backorders worldwide. The D028 places each requirement from the D041 one at a time to each using organization, in a manner that will minimize expected backorders (18:8).

Negotiated Levels - This is the same as an adjusted level in that, a Stock Control Section has requested and gotten approval for a specific level of assets that will enhance mission effectiveness (19:4-6).

Optimal Distribution - this will happen as a result of the D028 system minimizing the worldwide expected backorder rate for selected recoverables (3:105).

Order and Ship Time (O&ST) - "the average number of days between the initiation and receipt of stock replenishment requisitions." Also referred to as pipeline time (17:7).

Organizational Intermediate Maintenance (OIM) - "the expected number of reparables in the base repair cycle and base order and ship time pipelines, plus the expected number of OIM reparables in the depot repair cycle pipeline. These quantities are based on worldwide demands" (1:30-1).

Percent Base Condemnations (PBCs) - the percent of recoverables that cannot be repaired by intermediate or depot maintenance (1:30-1).

Percent Base Repair - the percent of time a recoverable/reparable is repaired (9:18-34).

Pull Concept - the Base Supply computer system (D002A) will requisition the requirement objective it computes from depot stock. In effect, it "pulls" the number of requisitions that it has determined sufficient to meet base needs.

Push Level - a level computed by the D028 and pushed to a using organization's Standard Base Supply System (SBSS)

computer to act as the official requisitioning objective (RO) over that computed by the SBSS (13:25;8:19-223).

Recoverable - 'an item of durable nature, which, when unserviceable, can be repaired economically either by a field or depot maintenance activity' (17:8).

Recorded User - a base that has established a demand level (two demands in 365 days) or a base with an adjusted stock level (9:18-5).

Recoverable Item Requirement System (D041) - a system that computes the future worldwide requirement of recoverable items needed by the Air Force.

Requirement Based - the D028 system is currently re- quirement based. This is because it uses the D041 worldwide requirement output as it computes a distribution of the worldwide requirement (2).

Requirement Computation - 'the comparison of the total assets to the total requirements' (8:19-30).

Requisitioning Objective - 'the maximum quantity of an item that must be on hand and/or on order to maintain current base operations' (8:19-29;8:19-50).

Stock Level - in the SBSS, a stock level is categorized as a demand level or an adjusted level (8:19-50).

Standard Base Supply System (SBSS)(D002A) - 'the unified management system that accomplishes all Base Supply and service workloads. The Standard Base Supply System operates through the collective interaction of supply procedures, service procedures, processing routines and the Sperry S1100/60 computer' (8:3-154)

Stock Record Account Number (SRAN) - a six digit alpha numeric code designating supply accounts at bases in the Air Force and Air Force contractors (7:1-1).

Transaction Identification Code (TRIC) - 'to identify internal transactions within the SBSS (issue, turn-in, due-in, due-out, report, file maintenance, inventory, etc.), and to indicate the purpose and use of the data as intended by the operation. The SBSS computer will recognize these codes under program control, select the appropriate programs, and react to the data (8:3-77).

Usage Data - 'comprised of daily demand rate (DDR), percent of base repair (PBRs), base repair cycle times (BRCT) and order and ship time (O&ST)' (8:18-5).

Variable Safety Level (VSL) - the D041 employs the VSL process to enable Item Managers to purchase a greater range of recoverable assets. An Item Manager can purchase in a manner that will reflect future needs better because of the VSL (19:2-1).

Wholesale Level - where purchasing, distribution and storage of recoverables and expendables takes place.

Worldwide Requirement - the requirement level worldwide as determined by the D041. The level represents the total number of assets the Air Force needs to operate efficiently (3:105).

Bibliography

1. Air Force Logistics Command. <u>Recoverable Item Requirement System (D041)</u>. AFLCR 57-4. Wright-Patterson AFB OH, 29 April 1983.

2. Bateman, Captain Jerry L., Chief, Tactical Aircraft Support Section. Telephone interview. HQ MAC, Scott AFB IL, 16 March 1988.

3. Blazer, Major Douglas <u>et al</u>. "Stockage Policy Course Material for Supply Officers." AFLMC Project LS850515. Air Force Logistics Management Center, Gunter AFS AL, January 1986.

4. Blazer, Lt Col Douglas, Chief, Material Management Division. Personal interview. HQ AFLC, Wright-Patterson AFB OH, 15 March 1988.

5. Blazer, Lt Col Douglas, <u>et al</u>. "D028 Problem Item Analysis." AFLMC Final Report LS840403. Air Force Logistics Management Center, Gunter AFS AL, April 1987.

6. Department of the Air Force. <u>Preparing Air Force Publications</u>. AFR 5-8, Washington: HQ USAF, 1 November 1987.

7. Department of the Air Force. <u>Standard Base Supply System</u>. AFM 67-1, Vol. I Part Two. Washington: HQ USAF, 9 March 1987.

8. Department of the Air Force. <u>Standard Base Supply System</u>. AFM 67-1, Vol. II Part Two. Washington: HQ USAF, 1 November 1987.

9. Department of the Air Force. <u>Standard Base Supply System</u>. AFM 67-1, Volume III, Part One. Washington: HQ USAF, 28 November 1983.

10. Doolin, CMSgt Timothy S. Jr. NCOIC, Supply Procedures. Telephone interview. HQ SAC, Offutt AFB NE, 16 Mar 1988.

11. Emory, C.W., <u>Business Research Methods</u> (Third Edition). Homewood IL: Richard D Irwin, Inc., 1985.

12. Hanks, Christopher H. <u>Asset vs. Requirements:</u>
    <u>Why Asset Based Central Leveling Is A Good Idea</u>.
    Logistics Management Institute, Bethesda Maryland,
    August 1987.

13. Hollums, Gary F. "Distribution Approaches: A
    History and a Suggestion." <u>Air Force Journal of</u>
    <u>Logistics</u>, <u>8</u>:25-29 (Fall 1984).

14. HQ USAF/LEYS. "47th Air Force Supply Executive Board
    Taskings." Electronic Message. 100800Z May 88.

15. Parnacott, CMSgt Leslie, Superintendent, Spares
    Policy and System Development Branch. Telephone
    interview. HQ TAC, Langley AFB VA, 16 March 1988.

16. Reynolds, Steven B, Analyst, Directorate of Supply,
    AFLMC. Personal Correspondence. Gunter AFS AL,
    1 November 1987.

17. Segovia, Sylvia. <u>AF Recoverable Central Leveling</u>
    <u>System (D028). Student Study Guide/Workbook:</u>
    <u>Course LMMIM16</u>. San Antonio Air Logistics
    Center TX, October 1986.

18. Triwush, Henry. <u>D028 Training Document</u>. Direc-
    torate of Management Sciences, Headquarters Air
    Force Logistics Command, Wright-Patterson AFB OH,
    November 1978.

19. _____. <u>Functional Description for Air Force</u>
    <u>Recoverable Central Leveling System (DSD D028)</u>.
    Document No: FD-D-10038D. HQ AFLC/LOLSP, Wright-
    Patterson AFB OH, June 1982.

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REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AFIT/GLM/LSM/88S-52	5. MONITORING ORGANIZATION REPORT NUMBER(S)

6a. NAME OF PERFORMING ORGANIZATION School of Systems and Logistics	6b. OFFICE SYMBOL (If applicable) AFIT/LSM	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Air Force Institute of Technology (AU) Wright-Patterson AFB OH 45433-6583		7b. ADDRESS (City, State, and ZIP Code)

8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS

	PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)

Air Force Recoverable Central Leveling System (D028): Retail Handbook

12. PERSONAL AUTHOR(S)
Thomas H. Mitchell, B.S., First Lieutenant, USAF

13a. TYPE OF REPORT MS Thesis	13b. TIME COVERED FROM_____ TO_____	14. DATE OF REPORT (Year, Month, Day) 1988 September	15. PAGE COUNT 63

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Spare Parts; Logistics Management; Logistics, Air Force Procurement, Acquisition, Theses, (kd)
15	05		

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Thesis Chairman: John E. Sullivan, Captain, USAF
Instructor in Logistics Management

Approved for public release IAW AFR 190-1.

WILLIAM A. _____ 17 Oct 88
Associate Dean
School of Systems and Logistics
Air Force Institute of Technology (AU)
Wright-Patterson AFB OH 45433

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL John E. Sullivan	22b. TELEPHONE (Include Area Code) (513) 255-4149	22c. OFFICE SYMBOL AFIT/LSMA

DD Form 1473, JUN 86   Previous editions are obsolete.   SECURITY CLASSIFICATION OF THIS PAGE

Unclassified

→   USAF Base Supply personnel have no quick reference source
which explains the system characteristics, computer interfaces
and general background of the Air Force Recoverable Central
Leveling System (D028). This thesis describes the methodology
behind the development of the D028 handbook.

    The handbook is broken into five main areas. The first
area, D028 background, describes the development of the D028
system. The second area describes the D028 process. It
details how the D028 system computes ⌐push levels┘ for each
using organization.

    The third area provides a short discussion on the positive/
negative aspects of the D028 system. The last section
describes future issues that will impact the Base Supply
community in the near future. A glossary of supply terms
is included to enhance the readers understanding of the
Air Force Recoverable Central Leveling System (D028).

Keywords: → *o field* 8